

San Joaquin River Settlement

River Restoration Informational Briefing

Lower Valley Regional Water District

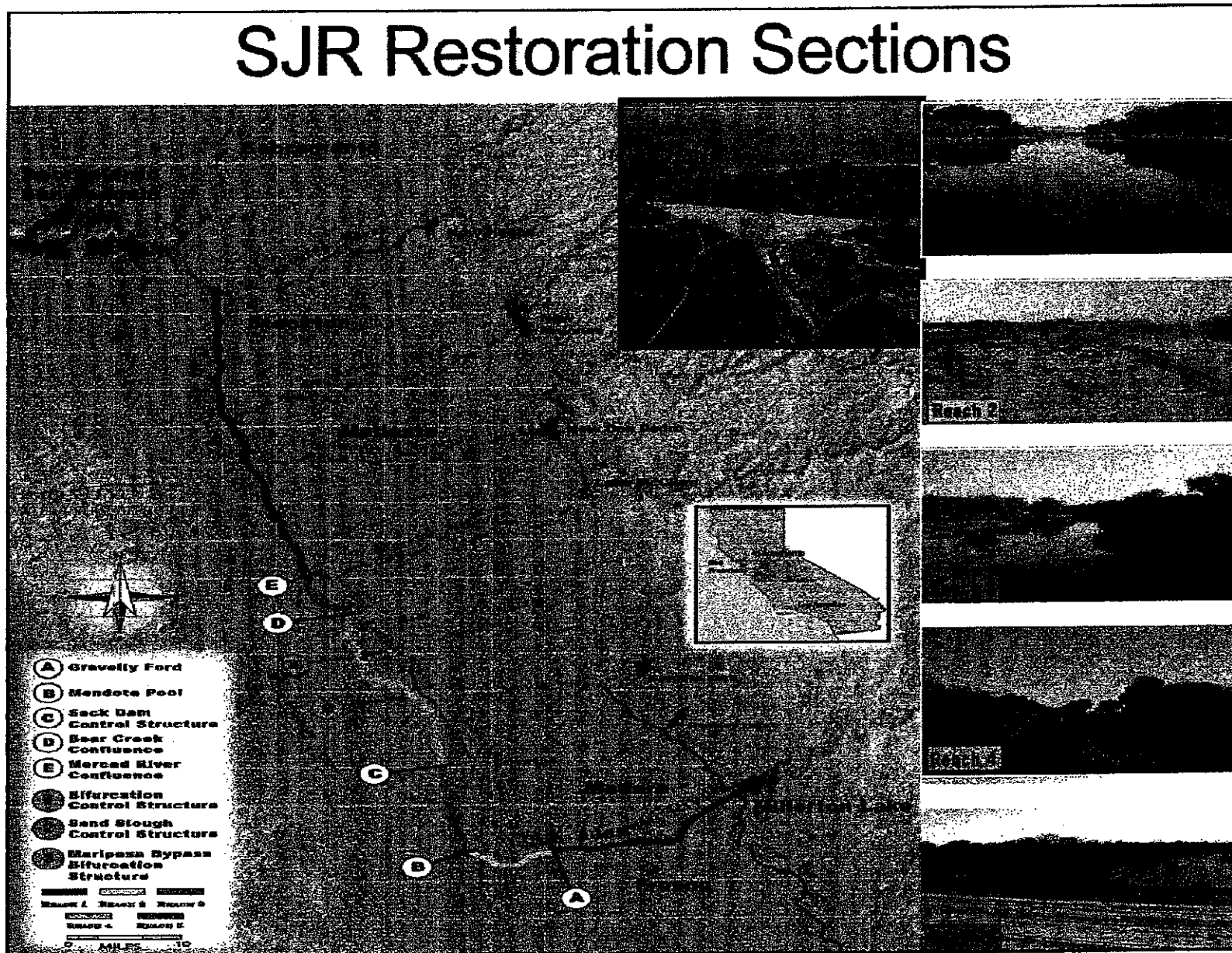
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SJR Restoration Sections



San Joaquin River Settlement Agreement

After more than 18 years of litigation, the parties to the lawsuit reached agreement on the terms and conditions of a Settlement and executed the Settlement in September 2006. The Settlement was approved by the U.S. District Court in October 2006. The Settlement is based on two parallel goals:

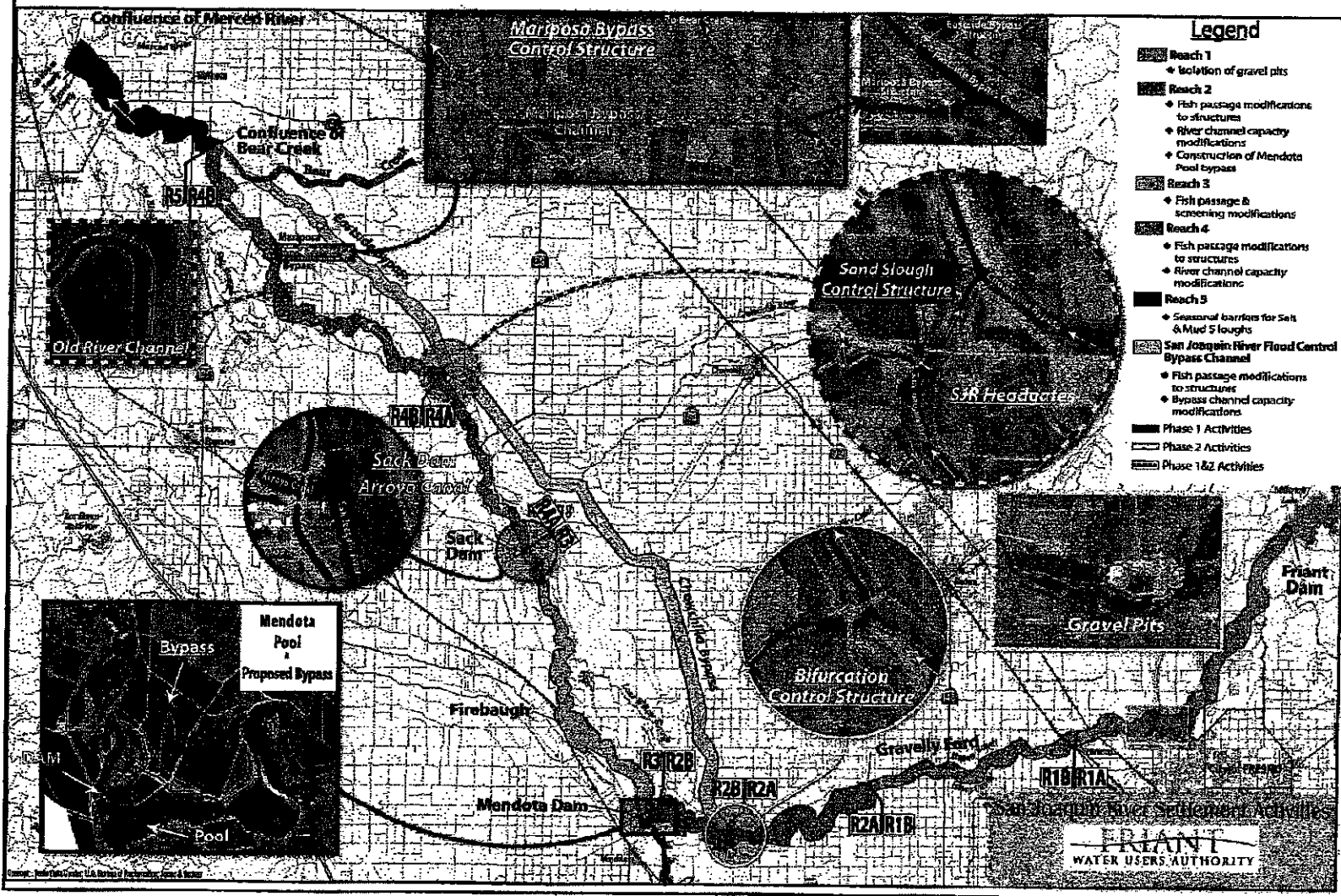
The Restoration Goal — To restore and maintain fish populations in “good condition” in the mainstem of the San Joaquin River below Friant Dam to the confluence of the Merced River, including naturally reproducing and self-sustaining populations of salmon and other fish.

The Water Management Goal — To reduce or avoid adverse water supply impacts to all of the Friant Division long-term Contractors that may result from the Interim Flows and Restoration Flows provided for in the Settlement.

Settlement Phases

- To accomplish these goals, the Settlement calls for a combination of channel and structural improvements along the San Joaquin River below Friant Dam and releases of additional water from Friant Dam to the confluence of the Merced River. The Settlement also calls for planning, implementation, mitigation, and funding measures to meet the goals. The improvements identified in the Settlement included in this presentation were taken from paragraph 11 of the Settlement.

Settlement Activities Map



Phase 1 Improvements

(to be completed no later than December 31, 2013):

- Creation of a bypass channel around Mendota Pool to convey at least 4,500 cubic feet per second (cfs) from Reach 2B to Reach 3 and construction of a structure capable of directing flow down the bypass and allowing the Secretary of the Interior (Secretary) to make deliveries of San Joaquin River water to the Mendota Pool.
- Modifications in channel capacity (incorporating new floodplain and related riparian habitat) to ensure conveyance of at least 4,500 cfs in Reach 2B between the Chowchilla Bifurcation Structure and the new Mendota Pool Bypass.
- Modifications in channel capacity to the extent necessary to ensure conveyance of 475 cfs through Reach 4B. See the following discussion regarding Reach 4B and proposed federal legislation Section 9(g).
- Modifications at the Reach 4B headgate to ensure fish passage and enable flow routing of between 500 cfs and 4,500 cfs in Reach 4B.
- Modification of the Sand Slough Control Structure to ensure fish passage.
- Screening the Arroyo Canal diversion structure to prevent entrainment.
- Modifications to Sack Dam to ensure fish passage.
- Modification of structures in the Eastside and Mariposa Bypass channels to the extent needed to provide fish passage on an interim basis until completion of Phase 2 improvements.
- Modifications in the Eastside and Mariposa Bypass to establish a suitable low-flow channel.
- Modifications to enable deployment of seasonal barriers to prevent adult fish from entering false migration pathways in the area of Salt and Mud sloughs.

Phase 2 Improvements

(to be completed no later than December 31, 2016):

- Modifications in channel capacity (incorporating new floodplain and related riparian habitat) to ensure conveyance of at least 4,500 cfs in Reach 4B unless such modifications would not substantially enhance achievement of the Restoration Goal.
 - Modification of the Chowchilla Bifurcation Structure to provide fish passage and prevent entrainment.
 - Filling and/or isolating the highest-priority gravel pits in Reach 1.
 - Modification of the Sand Slough Control Structure to enable routing and conveyance of Restoration Flows of up to 4,500 cfs into Reach 4B.
- **Additional Note:**
 - Paragraph 12 of the Settlement further acknowledges that "there are likely additional channel or structural improvements... that may further enhance the success of achieving the Restoration Goal."

TABLE 1
Restoration Actions Proposed by Reach

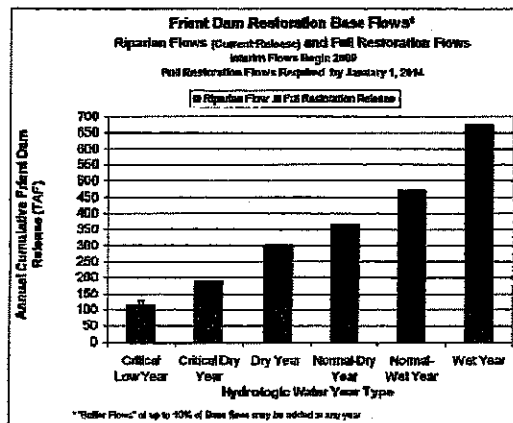
Reach	Proposed Restoration Actions ^a
1	<ul style="list-style-type: none"> • Reconstruct channel/side channels and add gravel for spawning habitat • Fill and isolate gravel pits • Screen diversions • Remove or reconstruct barriers to migration (road crossings) • Restore riparian habitat • Gravelly Ford diversion protection^b
2A	<ul style="list-style-type: none"> • Construct levee and channel improvements • Restore riparian habitat • Redesign or modify Chowchilla Bifurcation Structure for fish passage • Screen diversions
2B	<ul style="list-style-type: none"> • Construct levee and channel improvements • Restore riparian habitat • Remove or reconstruct San Mateo Road crossing • Screen diversions
Mendota Pool Bypass	<ul style="list-style-type: none"> • New bifurcation structure • Construct bypass channel • Fish screens and related fish bypass facilities • Create riparian habitat
3	<ul style="list-style-type: none"> • Construct levee and channel improvements • Replace or modify Sack Dam for fish passage • Screen Arroyo Canal • Screen other diversions • Restore riparian habitat
4A	<ul style="list-style-type: none"> • Construct levee and channel improvements • Screen diversions • Screen and modify Sand Slough Control Structure for fish passage

TABLE 1 (continued)
Restoration Actions Proposed by Reach

Reach	Proposed Restoration Actions ^a
4B Upper	<ul style="list-style-type: none"> •Conduct Section 9(g) study and report required by federal legislation to assess potential costs, impacts, and mitigation before determining phasing and flow routing for Reach 4B (flows routed down the Mainstem or through the Flood Bypass System) Flows Routed Through Mainstem: <ul style="list-style-type: none"> •Construct levee improvements and associated river channel and floodplain •Restore riparian habitat •Reconstruct road crossings •Screen diversions •Screen and modify Mariposa Bifurcation Structure for fish passage Flows Routed Through Bypass System: <ul style="list-style-type: none"> •Construct levee and channel improvements •Create riparian habitat •Screen diversions •Screen and modify Mariposa Bifurcation Structure for fish passage
4B Lower	<ul style="list-style-type: none"> •Construct levee improvements •Restore riparian habitat
5	<ul style="list-style-type: none"> •Screen diversions •Screen Mud and Salt sloughs

^a Proposed restoration actions are based on the channel and structural improvements identified in paragraph 11 of the Settlement as specified in the associated federal legislation. Additional actions may be necessary to further enhance the success of achieving the Restoration Goal, as described in paragraph 12 of the Settlement. Discussion of land acquisition needs is included in Section 2.2 Reach-specific Actions.

^b Actions not called for in paragraph 11 but required as part of restoration program.



Maintenance Flows
 Approximately 500 cfs
 and
 Pulse Flows
 Approximately 4000 cfs

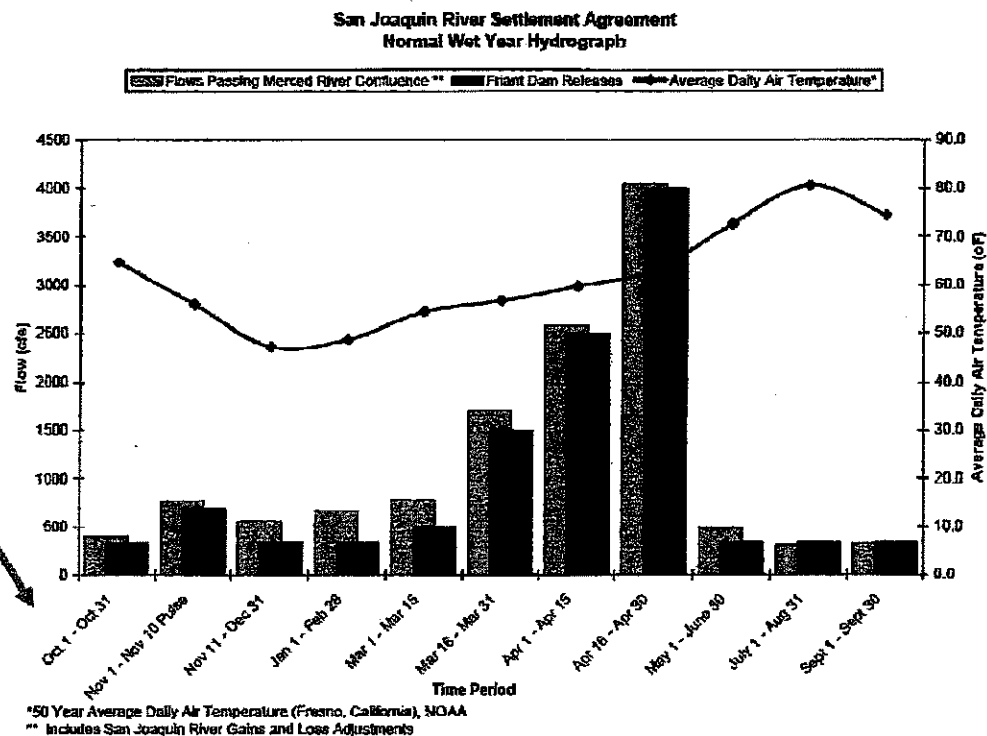


TABLE 2

Existing Levee & Channel Constraints and Potential System Improvements by Reach

Reach	Levee	Approx Current Maximum Capacity	Min. Design Flow	Existing Levee Stability or Piping Problems	Potential Impacts	Potential River System Improvements
1	None	8,000 cfs	7,000 cfs	Not Applicable	None identified	No improvements needed
2A	Project	8,000 cfs	7,000 cfs	Piping and seepage observed well below flow capacity and historical levee failure	Increased frequency and magnitude of flows can increase the amount of seepage, resulting in crop damage and exacerbating levee stability problems	Rebuild levees and install slurry walls; construct setback levees and new floodplain; construct low-flow channel
2B	Non-project	1,300 cfs	7,000 cfs	Significant seepage and stability problems with higher flows (greater than 1,300 cfs)	Inadequate capacity for Restoration Flows; increased frequency and magnitude flows will increase the amount of seepage, resulting in crop damage and levee stability problems	Rebuild levees and install slurry walls; construct setback levees and new floodplain; construct low-flow channel
3	Non-project	4,500 cfs	5,300 cfs	Seepage problems with higher flows	Increased frequency and magnitude of flows will increase the amount of seepage, resulting in crop damage and levee stability problems; potential flooding of urban areas with levee failure	Rebuild levees and install slurry walls

TABLE 2 (continued)
Existing Levee & Channel Constraints and Potential System Improvements by Reach

Reach	Levee	Approx Current Maximum Capacity	Min. Design Flow	Existing Levee Stability or Piping Problems	Potential Impacts	Potential River System Improvements
4A	Non-project	4,500 cfs	4,500 cfs	Seepage and levee stability problems	Increased frequency and magnitude of flows will increase the amount of seepage, resulting in crop damage and levee stability problems	Rebuild levees and install slurry walls
4B Upper Mainstem	None / Non-project	0 cfs	4,500 cfs	Lack of levees throughout much of the reach; lack of defined river channel	Inadequate capacity for Restoration Flows; lack of comprehensive levee system, low-flow channel, and floodplain; potential seepage-induced high groundwater and resulting crop damage	Construct levees with slurry walls; construct setback levees and new floodplain; construct low-flow channel
4B Upper Bypass System	Project	13,500 cfs	4,500 cfs	Piping and seepage observed at flows well below design capacity	Increased frequency and magnitude of flows will increase the amount of seepage, resulting in crop damage and levee stability problems	Rebuild levees and install slurry walls in some areas; construct low-flow channel
4B Lower	Project	10,000 cfs	4,500 cfs	Seepage and high groundwater results in crop damage during high flows	Increased frequency and magnitude of flows will increase the amount of seepage, resulting in crop damage and levee stability problems	Install slurry walls
5	Project	26,000 cfs	4,500 cfs	None identified at this time	None identified at this time	None identified at this time

San Joaquin River Restoration Timeline

2007

- Complete Final Program Management Plan
- Publish Notice of Intent and Notice of Preparation
- Appoint Restoration Administrator
- Hold Public Scoping Meetings & Issue Public Scoping Report
- Issue Draft Alternatives Report

2008

- Develop Draft Program Environmental Docs
- Issue Stage 1 Program Alternatives Report

2009

- Complete Program Environmental Impact Stmt/Environmental Impact Report
- Initiate Interim Restoration Flows

2012

- Reintroduce Salmon

2013

- Complete Phase 1 River Channel Improvements

2014

- Initiate Full Restoration Flows

2016

- Complete Phase 2 River Channel Improvements

2025

- Complete All Improvements

Potential Impacts & Conclusions

- **Conveyance of Kings River Flood Flows.**

- Restoration actions including riparian vegetation enhancement, levee and channel, improvements, the Mendota Pool Bypass, and revised operating criteria for the Chowchilla Bifurcation Structure, have the potential to conflict with the routing of Kings River flood flows.

- **Lower San Joaquin River Flood Control Project.**

- Existing channel capacity in the bypass system is sufficient to handle the Interim and Restoration Flows, however, these flows do not comply with the original mandated purpose of the bypass system and do not comply with the conditions of the flood easements for half of the bypass system.
- Expanded easements, land acquisition, and new legislation will be needed to route non-flood flows through the bypass system.
- New O&M agreements and increased perpetual funding for maintenance operations will be required. The additional costs to maintain the channel, levee, and related flood control facilities that would be constructed under the Settlement will far exceed the LSJLD current operating budget. Additional funds will be needed to cover this increased O&M cost and maintain the channels, levees, and related flood control facilities that would be constructed under the Settlement. Additionally, the presence of water in the river channel year-round or for extended times during the year will change the LSJLD maintenance activities including the timing, tools, and techniques used.
- The LSJLD is obligated to maintain the bypasses and the channel of the San Joaquin River in a condition where the channel will carry flood flows in accordance with the maximum benefits for flood protection. This obligation may be in direct conflict with some of the proposed restoration actions, including those that encourage vegetation growth in and along the river or bypass channels. The Settlement should not conflict with or reduce the channel capacity or its overall ability to convey flood flows in any way. Existing channel capacities must be maintained or enhanced.